



2012 Opportunity Index: Methodological Notes

Overview

The Opportunity Index is a unique tool designed to provide a snapshot of what opportunity looks like at the state and county levels. The Index focuses on *the conditions present in different communities* and is designed to help local communities connect economic, academic, civic, and other factors together to identify concrete solutions to lagging conditions for opportunity and economic mobility.

The 2012 Opportunity Index provides Opportunity Scores for all 50 U.S. states and Washington, DC, and Opportunity Grades for almost 2,900 counties and county equivalents,¹ home to 99.7 percent of the nation's population. These notes provide the methodology for calculating the 2012 Opportunity Index. A number of changes have been put in place to improve the Opportunity Index since it was first published in November 2011. As a result, the 2011 and 2012 Indexes are not comparable. And Index for 2011 has, however, been recalculated using the methods presented below in order to enable comparisons between the Opportunity Index for 2011 and 2012. Changes from 2011 are described on page 11 below.

¹ County equivalents include boroughs and census areas in Alaska, parishes in Louisiana, and cities with county-level status in several states. There are 3,143 counties and county equivalents in the United States, including Washington, DC, which is counted as a state in the Opportunity Index. Therefore, the Opportunity Index for counties analyzes 3,142 counties and county-equivalents.

The following table summarizes the themes and indicators that make up the 2012 Opportunity Index.

DIMENSION	THEME	INDICATOR
Jobs and Local Economy	JOBS	Unemployment Rate (%)
	WAGES	Median Household Income (\$)
	POVERTY	Poverty (% of population below poverty line)
	INEQUALITY	80/20 Ratio (Ratio of household income at the 80 th percentile to that of the 20 th percentile)
	ASSETS	Banking Institutions (commercial banks, savings institutions, and credit unions per 10,000 residents)
	AFFORDABLE HOUSING	Households Spending Less than 30% of Household Income on Housing Costs (%)
	INTERNET ACCESS	High-Speed Internet (% of households for states; 5-level categories for counties)
Education	PRESCHOOL	Preschool (% ages 3 and 4 in school)
	HIGH SCHOOL GRADUATION	On-Time High School Graduation (% of freshmen who graduate in four years)
	POSTSECONDARY COMPLETION	Associate Degree or Higher (% of adults 25 and older)
Community Health and Civic Life	CIVIC ENGAGEMENT	Group Membership (% of adults 18 and older involved in social, civic, sports, and religious groups) [STATES ONLY]
	VOLUNTEERISM	Volunteerism (% of adults ages 18 and older) [STATES ONLY]
	YOUTH ECONOMIC AND ACADEMIC INCLUSION	Youth Not in School and Not Working (% ages 16-24)
	COMMUNITY SAFETY	Violent Crime (per 100,000 population)
	ACCESS TO HEALTH CARE	Primary Care Providers (per 100,000 population)
	ACCESS TO HEALTHY FOOD	Grocery Stores and Produce Vendors (per 10,000 population)

Methodology

The indicators that make up the Opportunity Index are taken from reliable official national datasets (see Sources below). The state Opportunity Index is made up of 16 indicators; the county Index includes only 14 indicators. This is due to the unavailability of reliable, stable data for two indicators related to civic participation at the county level: group membership and volunteerism.

Calculating the Opportunity Index requires three general steps: normalizing the indicator in order to put them all on a common scale; averaging rescaled scores together within each of the three dimensions of the Index; and averaging dimension scores together to calculate the Opportunity Index. All of the indicators in the Opportunity Index are weighted equally, and each of the three dimensions makes up one-third of the final Index value.

Normalizing Indicators

Data for the indicators used in the Opportunity Index come in many different forms ranging from percentages to ratios, rates, or dollar values. Thus in order to include them in a composite index, it is necessary to *rescale* the data so that they are all expressed in a common form. The Opportunity Index uses a simple rescaling procedure that compares the performance of a state or county on a given indicator to the best and the worst performance observed anywhere on the same indicator.² The rescaled value is a value from 0 to 100, where 0 represents the worst possible outcome and 100 represents the best possible outcome. The general formula for rescaling indicators using this method is given below:

$$\text{Observed Outcome Rescaled} = \left(\frac{\text{Observed Outcome} - \text{Worst Outcome}}{\text{Best Outcome} - \text{Worst Outcome}} \right) \times 100$$

For some indicators, higher values *do not* represent positive or desirable outcomes, such as the unemployment rate, poverty rate, the 80/20 ratio, youth not in school and not working, and the violent crime rate. In these cases, one final rescaling step has been done by subtracting the outcome of the rescaling formula from 1 before multiplying by 100, as shown below:

$$\text{Observed Outcome Rescaled} = \left\{ 1 - \left(\frac{\text{Observed Outcome} - \text{Worst Outcome}}{\text{Best Outcome} - \text{Worst Outcome}} \right) \right\} \times 100$$

Calculating Dimension Scores

Once all the indicators are on a scale of 0 to 100 where 100 represents the most desirable possible outcome, scores are calculated for each of the three dimensions of the Index. Scores are the average of the rescaled values for all the indicators in the dimension. For example, the Education Score for a state is the average of rescaled scores for that state on preschool enrollment, on-time high school graduation, and postsecondary completion. Dimension scores range from 0 to 100.

Calculating the Opportunity Score and Assigning Opportunity Grades

After dimension scores have been calculated for all three dimensions, the final Opportunity Score for states is the average of the three dimension scores, again expressed as a value between 0 and 100. This is the final Opportunity Score used to rank the 50 states and Washington DC on the Opportunity Index.

Because the range of outcomes is generally more extreme for counties than for states, and in order to offer a different scale for a slightly different index (the county Opportunity Index includes only 14 indicators rather than the 16 of the state Index because of the unavailability of two indicators of civic

² The numerical values of the best and worst outcomes have been set so as to be sensitive to the range of outcomes observed at the state and county levels as well as extreme outliers and to anticipate changes in these indicators in the future. The natural log of median household income and the violent crime rate have been used in the process of rescaling these two indicators to normalize the highly skewed distributions of data on these indicators.

participation at the county level), counties receive a final Opportunity Grade, ranging from A+ to F instead of a numerical score from 0 to 100.

To determine the Opportunity Grade, the distribution of final, raw numerical outcomes of the 2011 Opportunity Index for counties and county-equivalents was analyzed. Counties with similar outcomes were grouped together based on how far their final scores were from the average, measured in standard deviations above or below the mean. These groups were then assigned letter grades ranging from A, for the counties with the very best overall outcomes, to F, for the counties with the worst outcomes. These groupings were based on the normal distribution of raw final scores in the 2011 Opportunity Index, in which a large number of counties had final outcomes close to the national average and relatively few had outcomes that were either very good or very poor. As a result, more counties received final Opportunity Grades of C-, C, or C+ than received Opportunity Grades of B or better or of D or worse. Instead of re-doing this grading scheme each year, the exact same method used to assign Opportunity Grades to counties, based on their raw final score, was used to score counties in the 2011 and 2012 Opportunity Index. This method will continue to be used to ensure that Opportunity Grades represent a consistent range of achievement over time and that county grades are comparable from one year to the next. Should the general trend observed between the 2011 and 2012 installments of the Opportunity Index continue, as most counties make progress on the indicators over time, that progress will be reflected by an increase in counties earning higher grades, and fewer receiving Ds or Fs.

Data Notes

Ideally, all data used to calculate final Opportunity Grades for a county would reflect data only for that county. However, in a limited number of cases where county-level data were missing, state-level data were used to fill gaps at the county-level in order to avoid having to exclude a large number of counties from the Index due to missing data. If a county was missing data for more than two indicators or for two indicators in the same dimension, then a final Opportunity Grade was not calculated for that county. If a county was missing data for two or fewer indicators, neither of which were in the same dimension of the Opportunity Index, then the rescaled average for the state within which that county is located was imputed in place of the missing data point. Out of a total of 3,142 counties and county-equivalents, 349 had to be excluded from the 2011 Opportunity Index due to missing data, and 275 had to be excluded from the 2012 Opportunity Index.

Most of the indicators used in the Index are estimates based on an analysis of survey data and are, therefore, subject to both sampling and non-sampling error. Where possible, data used to calculate the Opportunity Index were first analyzed in order to remove any extremely unreliable estimates. However, different dimension scores and overall Opportunity Scores and Opportunity Grades do not imply that differences between states or between counties or differences within a state or county over time are in every case statistically significant.

Sources

JOBS AND LOCAL ECONOMY DIMENSION

Indicator: Unemployment Rate (%)

Definition: The total number of people who do not have jobs but who have actively looked for work within the preceding four weeks and are available to work as a percentage of the total number of people in the labor force.

Source: Bureau of Labor Statistics, Local Area Unemployment Statistics tables and news releases (<http://www.bls.gov/lau/>).

Note: Unemployment rates in the 2011 Opportunity Index are for July 2011; unemployment rates in the 2012 Opportunity Index are for April 2012. Data are provisional and not seasonally adjusted.

Indicator: Median Household Income (\$)

Definition: The income of the household exactly in the middle of the distribution of households by income, ranked from wealthiest to poorest. Household income includes earnings from work and other income from interest, dividends, Social Security, pension payments, unemployment compensation, and other regularly received forms of money for all members of the household.

Source: U.S. Census Bureau, American Community Survey (http://factfinder.census.gov/home/saff/main.html?_lang=en).

Note: Because income is not distributed equally across individuals or households, the average (mean) household income is much higher than the median. Median household income for the United States is about \$50,000 whereas average household income is about \$68,000. Median household income data in the 2011 Opportunity Index are for 2009 for states and 2005-2009 for counties; data in the 2012 Opportunity Index are for 2010 for states and 2006-2010 for counties. All median household income figures are expressed in inflation-adjusted 2010 dollars.

Indicator: Poverty (% of population below poverty line)

Definition: Percentage of people of all ages living on incomes below the federal poverty line.

Source: U.S. Census Bureau, American Community Survey (http://factfinder.census.gov/home/saff/main.html?_lang=en).

Note: Poverty rate data in the 2011 Opportunity Index are for 2009 for states and 2005-2009 for counties; data in the 2012 Opportunity Index are for 2010 for states and 2006-2010 for counties.

Indicator: 80/20 Ratio (Ratio of household income at the 80th percentile to that of the 20th percentile)

Definition: The 80/20 ratio describes the disparity in the size of the income of the household at the 80th percentile relative to that of the income of the household at the 20th percentile. The 80/20 ratio for the United States is 4.8, meaning that the income of the household at the 80th percentile is 4.8 times that of the household at the 20th percentile.

Source: U.S. Census Bureau, American Community Survey
(<http://factfinder.census.gov/home/saff/main.html?lang=en>).

Note: 80/20 Ratio data in the 2011 Opportunity Index are for 2009 for states and 2005-2009 for counties³; data in the 2012 Opportunity Index are for 2010 for states and 2006-2010 for counties.

Indicator: Banking Institutions (commercial banks, savings institutions, and credit unions per 10,000 residents)

Definition: Total number of commercial banks, credit unions, and savings institutions (NAICS 522110, 522120, and 522130) per 10,000 residents, based on intercensal estimates of the July 1st resident population.

Source: U.S. Census Bureau, County Business Patterns and Population Estimates Program
(<http://www.census.gov/econ/cbp/index.html> and <http://wonder.cdc.gov/Bridged-Race-v2009.HTML>).

Note: Data on this indicator in the 2011 Opportunity Index are for 2009; data in the 2012 Opportunity Index are for 2010.

Indicator: Households Spending Less than 30% of Household Income on Housing Costs (%)

Definition: The percentage of households spending less than 30% of their household income on rent and utilities for households who rent or on mortgage payments and other housing costs for those who own their homes.

Source: U.S. Census Bureau, American Community Survey
(<http://factfinder.census.gov/home/saff/main.html?lang=en>).

Note: Thirty percent of household income going to housing costs is a widely accepted cut-off for affordability. This figure excludes housing units for which housing costs and/or household income could not be determined. Data on this indicator in the 2011 Opportunity Index are for 2009 for states and 2005-2009 for counties; data in the 2012 Opportunity Index are for 2010 for states and 2006-2010 for counties.

³ Data on this indicator were not available for counties in the state of Wyoming for 2005-2009 from the American Community Survey. Data for 2005-2007 from the American Community Survey were, however, available for most Wyoming counties and were used where available in the 2011 Opportunity Index.

Indicator: High-Speed Internet (% of households)

Definition: Ratio of the number of residential fixed Internet connections with a speed of at least 200 kbps in at least one direction to the total estimated number of households in that geographic area.

Source: Federal Communications Commission (FCC) Internet Access Services (<http://transition.gov/wcb/iatd/comp.html>).

Note: The state and county scales are different for this indicator due to confidentiality concerns. The FCC does not make the ratio of residential fixed connections to total households available at the county-level but rather provides ranges of the number of fixed residential connections per 1,000 households. Thus the county-level scale for this indicator is a scale of one to five, with five being highest Internet coverage. The categories are as follows:

Category	Range of number of households per 1,000 with a high-speed internet connection in their homes in each category
1	Greater than 0 and as many as 200 households per 1,000
2	Greater than 200 and as many as 400 households per 1,000
3	Greater than 400 and as many as 600 households per 1,000
4	Greater than 600 and as many as 800 households per 1,000
5	Greater than 800 households per 1,000

The actual ratio is available for the nation as a whole and for most states. State-level data were not available for Hawaii for either year. The value used for Hawaii for the high-speed internet indicator came instead from the report, *Exploring the Digital Nation: Computer and Internet Use at Home*, published by the U.S. Department of Commerce, The National Telecommunications & Information Administration, and The Economics and Statistics Administration (<http://www.ntia.doc.gov/report/2011/exploring-digital-nation-computer-and-internet-use-home>). All other data on this indicator for the 2011 Opportunity Index are from the FCC and correspond to June 2010; data for the 2012 Opportunity Index are for June 2011.

EDUCATION DIMENSION

Indicator: Preschool (% ages 3 and 4 in school)

Definition: The percentage of children ages 3 and 4 enrolled in public or private nursery school, preschool, or kindergarten.

Source: U.S. Census Bureau, American Community Survey
(http://factfinder.census.gov/home/saff/main.html?_lang=en).

Note: Data on preschool enrollment in the 2011 Opportunity Index are for 2007-2009 for states and 2005-2009 for counties; data in the 2012 Opportunity Index are for 2008-2010 for states and 2006-2010 for counties.

Indicator: On-Time High School Graduation (% of freshmen who graduate in four years)

Definition: The percentage of high school freshmen that graduate after four years of high school.

Source: State data are from the U.S. Department of Education, Nation Center for Education Statistics, *Digest of Education Statistics 2011*, Table 113 at http://nces.ed.gov/programs/digest/2011menu_tables.asp. County data are County Health Rankings analysis of data from the National Center for Education Statistics and Departments of Education of various states. University of Wisconsin Population Health Institute. County Health Rankings. Available at <http://www.countyhealthrankings.org>.

Note: State and county data for this indicator come from different sources. Data for states come from the National Center for Education Statistics and are averaged freshman graduation rates from public secondary schools for each state. State data in the 2011 Opportunity Index are for the 2007-2008 school year and state data in the 2012 Index are for the 2008-2009 school year.

County data for the 2011 Opportunity Index are also averaged freshman graduation rates for the 2006-2007 school year, with the exception of estimates for counties in Kentucky, New Hampshire, North Carolina, Pennsylvania, South Carolina, and Utah, which come from state sources and are for the 2008-2009 school year. County data for the 2012 Opportunity Index are newly available “cohort” graduation rates for counties in most states, which actually track students from freshman year to graduation and account for students who transfer to other schools or who graduate early. Averaged freshman graduation rates, which divide the number of diplomas awarded by an estimate of the number of students who entered high school four years before, were still used for counties in twelve states: Alabama, Alaska, Arkansas, Connecticut, Hawaii, Idaho, Montana, New Jersey, North Dakota, Oklahoma, South Dakota, and Tennessee. These county data are for the 2007-2008 or 2008-2009 school years, depending on the state. Due to the differences in methodology and years of the data used for this indicator, county-level On Time High-School Graduation comparisons between counties and for counties over time should be made with caution.

Indicator: Associate Degree or Higher (% of adults 25 and older)

Definition: The percentage of adults ages 25 and older who have completed an associate degree or higher.

Source: U.S. Census Bureau, American Community Survey (http://factfinder.census.gov/home/saff/main.html?_lang=en).

Note: Data on this indicator in the 2011 Opportunity Index are for 2009 for states and 2005-2009 for counties; data in the 2012 Opportunity Index are for 2010 for states and 2006-2010 for counties.

COMMUNITY HEALTH AND CIVIC LIFE DIMENSION

Indicator: Group Membership (% of adults 18 and over involved in social, civic, sports, and religious groups)

Definition: The percentage of adults 18 and over who report being members of social, civic, service, recreational, or religious groups in the previous year.

Source: Measure of America analysis of data from the U.S. Census Bureau, DataFerrett, Current Population Survey, Civic Engagement Supplement. Due to limitations of the survey data, this indicator is only calculated at the state level.

Note: Membership in a religious group includes those actively involved in activities in their place of worship and does not include those who attend religious services only. Two years worth of survey responses were pooled to increase the sample size available for analysis. This helps make estimates of the percentage of the adult population who are members of groups more stable. Data for this indicator in the 2011 Opportunity Index are for 2008 and 2009; in the 2012 Opportunity Index data are for 2009 and 2010.

Indicator: Youth Not in School and Not Working (% ages 16-24)

Definition: The percentage of the population ages 16 to 24 who are not enrolled in school and who are not working (either unemployed or not in the labor force).

Source: Measure of America analysis of data from the U.S. Census Bureau, American Community Survey PUMS Microdata (http://factfinder.census.gov/home/saff/main.html?_lang=en).

Note: The percentage of youth not in school and not working was directly calculated by Measure of America for every state as well as Washington, DC and for 382 counties, mostly large counties in or near urban centers. For the remaining 2,760 counties and county-equivalents, many of which have youth populations so small that this indicator could not be calculated for them individually, neighboring counties were grouped together and pooled estimates of the percentage of youth not in school and not working were calculated for these groups of counties. Each county in the group then shares the group estimate. This provides the most reliable estimates possible even for areas with small populations and allows for the calculation of an estimate for every county and county-equivalent in the United States. Data on this indicator in the 2011 Opportunity Index are for 2009 for states and 2005-2009 for counties; data in the 2012 Opportunity Index are for 2010 for states and 2006-2010 for counties.

Indicator: Volunteerism (% of adults ages 18 and older)

Definition: The percentage of adults 18 and older who did volunteer work through or for an organization at any time in the previous year.

Source: Measure of America analysis of data from the U.S. Census Bureau, DataFerrett, Current Population Survey, Volunteering Supplement. Due to limitations of the survey data, this indicator is only calculated at the state level.

Note: Two years worth of survey responses were pooled to increase the sample size available for analysis. This helps make estimates of the percentage of the adult population that engage in volunteer activities more stable. Data for this indicator in the 2011 Opportunity Index are for 2009-2010; data in the 2012 Opportunity Index are for 2010-2011.

Indicator: Violent Crime (per 100,000 population)

Definition: Total number of violent crimes per 100,000 people. Violent crimes include homicide, rape, robbery, and assault.

Source: State data from the U.S. Department of Justice, Federal Bureau of Investigation Uniform Crime Reporting Statistics (www.ucrdatatool.gov); county data from the County Health Rankings analysis of data from the U.S. Department of Justice, Federal Bureau of Investigation Criminal Justice Information Services. County data from Illinois were obtained by County Health Rankings from the Illinois State Police Uniform Crime Reporting data. University of Wisconsin Population Health Institute. County Health Rankings. Available at www.countyhealthrankings.org.

Note: Data for this indicator in the 2011 Opportunity Index are for 2009 for states and 2006-2008 for counties; data in the 2012 Opportunity Index are for 2010 for states and 2007-2009 for counties.

Indicator: Primary Care Providers (per 100,000 population)

Definition: The number of primary care physicians per 100,000 residents. Primary care physicians include those in general practice and internal medicine, family care, pediatrics, and obstetrics/gynecology.

Source: County Health Rankings analysis of data from the U.S. Department of Health and Human Services, Health Resources and Services Administration, Area Resource File. University of Wisconsin Population Health Institute. County Health Rankings. Available at www.countyhealthrankings.org.

Note: Data on this indicator in the 2011 Opportunity Index are for 2008; data in the 2012 Opportunity Index are for 2009.

Indicator: Grocery Stores and Produce Vendors (per 10,000 population)

Definition: The rate of supermarkets, grocery stores, and produce stands (NAICS codes 445110 and 445230) per 10,000 residents, based on intercensal estimates of the July 1st resident population.

Source: U.S. Census Bureau, County Business Patterns and Population Estimates Program (<http://www.census.gov/econ/cbp/index.html> and <http://wonder.cdc.gov/Bridged-Race-v2009.HTML>).

Note: Data on this indicator in the 2011 Opportunity Index are for 2009; data in the 2012 Opportunity Index are for 2010.

Changes to the Opportunity Index Since 2011

The Opportunity Index was created by Measure of America drawing on robust social science research and inputs from a coalition of organizations partnering with Opportunity Nation. Following the launch of the Opportunity Index in November 2011 and its application in a number of local communities across the nation, further feedback and “road testing” allowed for a refinement of the Index. In addition to a change in the methodology for calculating the Opportunity Index as described above, two indicators were removed, another was added, a few definitions were tweaked, and the county coverage was significantly expanded. The following table summarizes these changes:

Changes to the 2012 Opportunity Index

Theme	Action	Reason	New Indicator
Inequality	New indicator Added	A measure of income inequality was added to the Opportunity Index to reflect the fact that the economic ladder is harder to climb when its rungs become too far apart. Today’s large and growing socioeconomic inequality is increasingly presenting obstacles to those at the bottom and middle rungs. Highly unequal societies often struggle with economic inefficiency, reduced social cohesion and stability, and politics that too often favor the few in place of policies that benefit everyone.	80/20 Ratio (ratio of household income of 80 th percentile to that of the 20 th percentile)
Postsecondary Funding	Removed	State Higher Education Subsidy (% of annual average per pupil education and related costs covered by state) was removed. Although this indicator measures an important aspect of access to higher education—subsidies to pay for it—the indicator correlated weakly with state-level Opportunity Scores, suggesting a somewhat random relationship between this indicator and other proxies of opportunity. In addition, there has not been a data update for this indicator since the 2011 Index, precluding the possibility of tracking change over time.	None
Assets	Indicator	The indicator for access to banking institutions has been	Banking

	Modified	recalculated to express the number of banking institutions as a rate per 10,000 residents rather than 1,000, a scale that better reflects the concentration of banking institutions in most communities. Whereas the 2011 value for this indicator for the U.S. was .42 banking institutions per 1,000 residents, it is now 4.2 banking institutions per 10,000.	Institutions (commercial banks, savings institutions, and credit unions per 10,000 residents)
Affordable Housing	Indicator Modified	The indicator Renters Spending Less than 30% of Household Income on Housing Costs (%) has been expanded to include the housing costs of home-owners as well as renters, thus broadening this indicator to be reflective of almost all American households.	Households Spending Less Than 30% of Income on Housing (%)
Postsecondary Completion	Indicator Modified	The postsecondary educational attainment indicator Bachelor's Degree or Higher (% of adults 25 and over) was changed to include adults who have completed an associate degree or higher. This change was in response to a growing understanding that while postsecondary education is increasingly important in the job market, a traditional, four-year bachelor's degree program is not necessarily right for everyone. This indicator now captures the percentage of adults who have completed a postsecondary associate or higher degree.	Associate Degree or Higher (% of adults 25 and older)
Youth Economic and Academic Inclusion	Indicator Modified	The indicator Teenagers Not in School and Not Working (% ages 16-19) has been expanded to include teenagers and young adults up to and including age 24 in order to better capture challenges facing youth in their early 20's as they seek a point of entry into a career path, pursue higher education, or transition from school to work.	Youth Not in School and Not Working (% ages 16-24)
Community Safety	Removed	In the initial version of the Opportunity Index, the homicide rate (per 100,000) was used in counties where the violent crime rate, the preferred indicator for community safety, was not available. Due to an improved violent crime rate dataset, the use of homicide rates is no longer necessary.	None
Access to Healthy Food	Indicator Modified	The healthy food access indicator Grocery Stores and Supermarkets (% of zip codes with at least one) was replaced with the rate per 10,000 residents. Zip codes range tremendously in terms of both land area and population they encompass so this standard rate per population is better.	Grocery Stores and Produce Vendors (per 10,000 population)

Because of these refinements, the 2011 and 2012 Opportunity Indexes are not comparable to the Index launched at the November 2011 Opportunity Summit. However, a rerun of the 2011 Index using the 2012 indicators and methodologies means that comparisons are now fully possible between the 2011 and 2012 Opportunity Index.

References

U.S. Census Bureau. "American Community Survey Multiyear Accuracy of the Data," 2010. http://www.census.gov/acs/www/Downloads/data_documentation/Accuracy/MultiyearACSAccuracyofData2010.pdf.

The Measure of America. "Methodological Notes," 2010. <http://www.measureofamerica.org/wp-content/uploads/2010/11/The-Measure-of-America-2010-2011-Methodological-Notes.pdf>.